

REMARKS

The Applicants have carefully considered the rejections raised in the Office Action dated October 12, 2004. As a result, claims have been amended to comply with the Examiner's requirements, as outlined herebelow:

Claims 99 and 100, which have been rejected for being indefinite under 35 U.S.C. 112, second paragraph, on the basis the term "superlattice" is considered unclear. Responsively claims 99 and 100 have been amended to simply recite a "photonic crystal structure". Claim 99 has been further amended to recite "the first and second colloidal photonic crystals exhibiting optical Bragg diffraction" which is consistent with the previous amendments made to the independent claims and is supported in many places throughout the specification, for example on page 45, lines 24 to 32.

New claims 103 and 104 depending from claims 92 and 96 are similar to claim 100.

Claims 92 and 96 have also been amended to explicitly recite that the colloidal crystals are photonic crystals and each photonic crystal Bragg diffracts at a different wavelength because they are of a different size. This is supported on page 42, lines 24-25 and in the Example 1 heading on page 43 (**Bi Frequency Colloidal Crystal Bragg Diffractor ...**). The Examiner's attention is specifically directed to lines 27 to 30 where it is explicitly stated that **photonic crystals** are obtained. Claim 92 has further been amended to incorporate the subject matter of claim 93.

The Examiner has rejected claims 92-94 as being obvious over Asher et al. (U.S. Patent No. 6,014,246). Reconsideration and withdrawal of this rejection is requested for the following reasons. Asher discloses producing photonic crystals on a substrate which exhibit Bragg diffraction using monodisperse

particles. These devices are made by encapsulating the colloidal particles in a hydrogel, and not by the method of claim 92.

It is noted that in respect of the passageways pointed out by the Examiner in Asher, the passage in column 5 notes that there can be regions of the colloidal crystal which Bragg diffract, and adjacent areas which do not Bragg diffract so they transmit (lines 50-56 in column 5). This is quite different from Applicants' claim 92 which recites forming different regions of photonic crystals with different sized particles, which DO Bragg diffract but at different frequencies. The passage in column 9, lines 1 to 62, also describe something quite different from Applicants' claim 92. Specifically, Asher describes a device in which the colloidal particles are embedded in a hydrogel. This structure can then be tuned to Bragg diffract different frequencies by tuning the structure by expanding or contracting the hydrogel thereby altering the spacing between the particles in order to shift the frequency, see lines 30 to 45. This is quite different than Applicants' claim 92.

Claim 96 has been amended to explicitly recite that the different crystal arrays are photonic crystals exhibiting Bragg diffraction, (which is the structure produced in the method of claim 92 similarly amended as discussed above), and is also supported on page 42, lines 24-25 and is the structure produced in Example 1 page 43 which has the heading **Bi Frequency Colloidal Crystal Bragg Diffractor ...**). The Examiner's attention is specifically directed to lines 27 to 30 where it is explicitly stated that **photonic crystals** are obtained.

Claims 96 and 97 have been rejected as being anticipated by Maenosono et al. (U.S. Patent No. 6,337,117). Applicants respectfully disagree with the Examiner that the subject matter of claim 96 is anticipated by Maenosono et al. and requests withdrawal of this rejection in view of the amendments to claim 96 and the following observations.

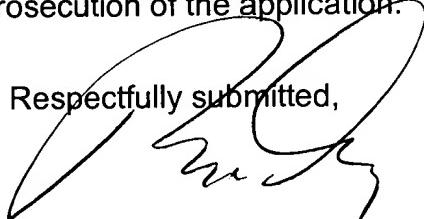
Maenosono is directed to bicolor devices in which different color arises from different regions of the material, each one of these regions being made of packings of a specific particle size. However in the devices disclosed in Maenosono the different colors are the result of luminescence at different wavelengths arising from the different light absorption taking place in crystals because of their different sizes so that wavelength dependent luminescence is achieved through size control of the *luminescent* particles. In the device of claim 96, the physical phenomena is that of *light diffraction*, not luminescent through light absorption. There is no discussion at all in Maenosono regarding photonic crystals.

Applicant respectfully submits that the amendments made herein are to more particularly and succinctly recite the invention. All the amendments are supported by the application as originally filed, and therefore no new matter is being added.

In view of the foregoing amendments and remarks, reconsideration And withdrawal of the rejection is respectfully solicited and favourable consideration and allowance of claims is requested.

Should the Examiner have any questions regarding the allowability of the claims with respect to the art, it would be appreciated if the Examiner would contact the undersigned attorney-of-record at the telephone number shown below for further expediting the prosecution of the application.

Respectfully submitted,



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Date: November 3, 2004

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